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GOING VALUE

BY

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MILWAUKEE, WISCONSIN

CHANDLER PUBLISHING COMPANY, STATE PRINTER.
1904



GOING VALUE

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Before Indiana Electrical Convention, Indianapolis, Sept. 23d, 1914.

The subject assigned to me for this paper was "Valuation for Rate-Making Purposes". When a few days ago I got down to work on the paper, however, I found this subject to be so comprehensive that neither the time nor the space at my disposal would have enabled me to cover it as fully as it should be covered, or as its importance demands. In view of these facts I was forced to limit my paper to only one part of the subject, namely, that of "Going Value."

One of the storm centers in the modern theory of rate regulation is the problem of "going value", or, as it is sometimes called, the "value of an established business". This problem has proven a difficult one to solve because from its very nature it concerns itself with something intangible and because those who have introduced the problem to us have been guilty of some rather careless thinking. The self-interest of advocates has found it to be a convenient means of pressing large claims for value. This tendency has in its turn brought a reaction against it from many who now demand that nothing should be allowed for this so-called "intangible". So it has come about that in the strife of conflicting interests we are in danger of losing our economic basis for price fixing, for the real basis of both price and value are economic. In addition to the above, what has brought further difficulty is the tendency in some quarters to draw conclusions quickly without a proper sensing of the problem in all its phases.

The object of this paper is to briefly explain what is meant by going value, the position of the courts upon this subject, how it is determined, and what should be done with it. In addition

to this, illustrations are included which show how the costs which form the bases of going value, as understood by the Wisconsin Commission, are actually determined. Incidentally, certain criticisms of the Commission's methods in determining values will also be touched upon.

WHAT IS MEANT BY "GOING VALUE"?

Like most other intangible concepts, the concept of value can be made definite and distinct when we begin to think about it in an ordinary common sense way. Similarly the concept of going value can be made tangible and distinct when we cease thinking about it vaguely. Just as value in general has been defined in the sense of reasonable or normal cost and just as by means of this definition we have been able to get reasonably close valuations of tangible physical property, so by a similar definition will it be possible to get reasonably close valuations of an intangible element like "going value". The cost principle contained in this definition will, if properly applied, act as a chemical reagent to precipitate what was formerly held in solution. This definition of "going value" is about as follows: "Going value represents the reasonable cost or financial sacrifice incurred by the investor in building up a business which will yield a fair return upon the fair value of the tangible physical property."

In explanation of the principle contained in the above definition, I will quote from what I said in one of the early decisions of the Wisconsin Railroad Commission (in *Hill v. Antigo Water Co.* 3 W. R. C. R. 623, 706, one of its earliest decisions on the subject). The opinion reads:

"A mere physical plant, no matter how perfect or how well it is adapted to the purpose for which it is intended, amounts to but little unless it has or can obtain a paying business. Without business it is a dead mass instead of a living concern earning profits. To have profits it must have business or customers who avail themselves of the services it renders at rates that yield an adequate income. But new plants are seldom paying at the start. Several years are usually required before they obtain a sufficient amount of business or earnings to cover operating expenses, including depreciation and a reasonable rate of interest upon the investment. The amount by which the earnings fail to meet these requirements may thus be regarded as deficits from operation. These deficits constitute the cost of building

up the business of the plant. They are as much a part of the cost of building up the business as loss of interest during the construction of the plant is, a part of the cost of its construction. They are taken into account by those who enter upon such undertakings, and if they cannot be recovered in some way, the plant fails by that much to yield reasonable returns upon the amount that has been expended upon it and its business. Such deficits may be covered either by being regarded as a part of the investment and included in the capital upon which interest is allowed, or they may be carried until they can be written off when the earnings have so grown as to leave a surplus above a reasonable return on the investment that is large enough to permit it. * * * Whether they should go into the capital account, or whether they should be written off, as indicated, are questions that largely depend on the circumstances in each particular case."

This, in brief, explains the position of the Wisconsin Commission on "going value". Nor has it ever departed from this position in any decision since the one just quoted. Whatever else may in some quarters have been assumed to have been included by it in "going value" is a pure assumption and has no foundation in fact. To be sure, it has at times varied the methods by which going value is appraised, but the principle upon which such appraisals rest has never varied.

It is of course a fact that if the rates could be fixed, as in rare instances they actually have been, at a sufficiently high point in the beginning to cover all legitimate expenses, including a reasonable return on the investment, the deficits might be greatly reduced and the cost of developing the business almost wiped out. Generally speaking, however, such rates seem to be almost entirely out of the question. Until a sufficient number of customers have been obtained, such rates would as a rule be too high. Instead of increasing the earnings they would be likely to decrease them. There are even cases where such rates might be entirely prohibitive and result in no earnings whatsoever.

Hence we find that it is the almost universal experience of plants to show deficits below what are reasonable earnings for at least some of the early years. The plants do, of course, try to overcome these deficits both by necessary adjustments in the rates and by direct expenditures to develop new business. Since public service enterprises are in a measure businesses of increasing returns, it is in line with good business principles that such

methods be adopted. In the face of all this, should a public regulating body, charged with the responsibility of adjusting the relations between investors and consumers upon legal and equitable bases, deliberately disregard this condition? It is submitted that this can not be done and still enable the regulating body to square itself with existing law and sound economics.

At a recent meeting of the American Economic Association, Professor J. H. Gray of the University of Minnesota read a paper on "The Regulation of Public Service Corporations". Discussing what he calls "The vagaries of valuation", the author definitely commits himself to the policy of adjusting the relations of consumers and public service companies upon the legal basis of "principal and agent". This basis the author defines briefly to be about as follows: "An agent is entitled to a just compensation for his services, including his outlay of money for the principal, but in no case to any gains or profits on any transaction undertaken or carried on for his principal". While it is my opinion that the theory of principal and agent can not be made to apply here, the discussion of its applicability being entirely outside the scope of this paper and one to be reserved to those more learned in the law, it seems that the cost principle of determining going value outlined above very well meets the requirements of even the theory of principal and agent. It is also a little difficult to understand the reasons for insinuations by the same author against the fairness of the Wisconsin Commission's method of determining the value of public service properties:

"The limit, up to the present, to which this vagary has carried us is found in the claims of the companies in the recent Superior, Wisconsin, rate case. The Commission's engineers, on their well known liberal principles of estimating the cost of reproduction, found the value of the combined plants to be \$1,349,523. This, of course, includes contingencies, interest during construction, organization expenses of all sorts, contractors' profits, and so on. The company demanded an additional value for rate purposes of \$182,734 for accrued and unmet depreciation on existing property, \$202,200 discount on bonds, \$5,448 on organization expenses, \$24,914 for gas connections which they do not own, \$92,516 on property previously discarded, or a total addition of \$508,085, or 36 per cent of the value, not of the investment in the physical plant, but of the hypothetical cost of reproducing that plant."

The above skillfully worded assertion was evidently meant to convey the idea that the Commission, if it did not actually allow the items enumerated, was largely and wrongly influenced in making its final valuation by the claims advanced. He then evidently sought to mitigate the above insinuations by a foot-note in which he quoted a figure which he assumed to be the valuation fixed by the Commission, which figure did not greatly exceed the present value of the physical properties. His position in the matter, however, deserves some notice.

The theory of principal and agent which he resorts to in order to obtain some basis upon which to exclude from the valuations of public utilities such items for going value as those allowed by the Commission does not only fail to sustain his position in the matter, but on the contrary it supports the course of the Commission. Under this theory the agent or utility is entitled to "just compensation for his services including his outlays of money for his principal." If this means anything it is that the losses incurred because the plant failed to earn reasonable compensation is a just charge against the public. It means that the plants must be compensated for such losses or outlays of money not only during a development period of normal length only, as assumed by the Commission, but for the entire time such losses have appeared. The principal and agent theory is thus in effect even more favorable to the utilities in this respect than the Commission has ever been. That this is the case becomes clear when it is pointed out that many utilities, especially among the smaller ones, have earned less than what is ordinarily regarded as reasonable returns not only during a development period that might be considered normal, but for a much longer time than this.

Again, by saying "the Commission's engineers, on their well-known liberal principles of estimating the cost of reproduction," he evidently intends to convey the impression that the Commission and its engineers are unduly liberal in favor of the utilities. Now this insinuation must be based on hearsay evidence only, for it is contrary to the facts and is not supported by any evidence. In order to pass upon the fairness of a valuation, it is necessary to examine in detail the inventories of the property, its character and condition, the unit prices used in computing the costs, the bases upon which its depreciation was determined, and many other facts of this nature. These facts are available

in the office of the Commission, but they have not been examined by Mr. Gray, either personally, or, as far as known, through any competent engineer. It might be added in this connection that several of the Commission's valuations, on appeals, have successively passed through the courts, not one being reversed. They have also been subjected to other tests equally severe without serious effect. Many of its valuations are also accepted without any contest by engineers and attorneys who represent the municipalities or the public, as well as by those who represent the utilities.

Of the items thus enumerated by Mr. Gray as specific examples of the "vagaries" which he says have crept into the valuations fixed by "learned courts and tethered commissions", there are several which may contain important features which deserve serious consideration and which can by no means be justly brushed aside in the easy offhand manner in which he evidently thinks they should be disposed of. Such items as he classes as vagaries are met with in most of the more important appraisals; but no competent and conscientious appraiser who has had experience in such matters ever peremptorily dismisses them from consideration until they have been fully and fairly examined and their merits and demerits determined. When the claims for discounts on bonds, for example, are thus analyzed, it is frequently found that they are made up of various items that deserve little or no consideration, as well as of various other items that may deserve a great deal of consideration. Discounts on bonds necessarily incurred in order to obtain needed capital are of the nature of interest charges, and must as a rule be provided for either by being charged to the cost of construction, like the direct interest charged for the period involved on the capital used, or by higher rates of interest later on, charged against the cost of operation.

In order to illustrate the nature and importance of discounts of this sort a few figures will be given. During the past few years, bonds issued by the smaller utilities bearing interest at 5 per cent covering not more than about 80 per cent of the cost of the plant and business, have had to be offered to the public at discounts of from 8 per cent to 15 per cent, or thereabouts. In addition to this, a selling expense of from say 2 per cent to 5 per cent or more must be met, which selling expense covers the charges of bond houses and bankers for distributing the bonds

among their customers. The total discount which the utilities thus have to bear often amounts to 15 per cent or more. A discount of this amount on a 5 per cent twenty year bond means that the annual cost of the capital obtained is thereby increased from 5 per cent to about 6 per cent.

Such discounts, however, are as much a part of the cost of obtaining capital as is the rate of interest stipulated in the bond. They must be assumed by the utilities in order to obtain the necessary capital for new plants and for new additions to existing plants. They must also be borne by the public. If they are not so borne, the public will, in the long run, have to do without much needed service. In this connection it is well to bear in mind that utilities, the same as other enterprises, must obtain their capital in the open market at prices fixed by economic forces over which they have no control.

Whether discounts of this kind should, like the balance of the interest charges during construction, be charged to the construction for which they are incurred, or covered by higher interest charges later on, as suggested above, is a question that for each plant must be settled in the light of the conditions by which the plant is surrounded. They must, however, be disposed of in the one way or the other. Mr. Gray did not give his reasons for stating that such discounts should not be considered in the appraisals; but it would be interesting to know on what principles of equity and public policy his position is based.

In analyzing other items in the "vagary" group, similar conclusions are reached. Ordinarily, the Commission allows about one per cent of the construction cost for organization, legal and certain other expense items, including clerk hire and office rent during the construction period. In many cases this allowance is found to be high enough, but in other cases again it is far from sufficient. In cases where law suits and other complications are met with, the legal expenses alone are apt to amount to several times as much as this allowance. Again, when it comes to depreciation and superseded property or to claims therefor, no engineer or appraiser of integrity would feel justified in passing upon the same without knowing the extent of and the reasons for such supersession, whether in the past the depreciation allowances and the earnings for the same have been sufficient, and many other equally pertinent facts. In many cases much of the property of a utility may have had to be discarded long

before the end of its life and before the cost of the renewals was covered by the amount set aside for depreciation, because of municipal and other similar requirements. There are thus many conditions under which claims under the above heads may, for at least a part of their amount, be entitled to consideration. It is the plain duty of courts, commissions and appraisers to investigate such claims and to give them such weight as that to which they are equitably entitled. This is precisely what the Commission did in the case mentioned, as the conclusions therein plainly show. Mr. Gray, however, would eliminate all such items from the appraisals without any investigation as to their merits or how they may have had to be incurred.

THE COURTS ON GOING VALUE.

The statement has been frequently made, and it has been reiterated by the author who has just been mentioned, that law and economics have parted company. Whatever the position of some courts in individual cases may have been in the past with respect to going value, the more recent decisions certainly show that courts now appreciate the economic significance of the subject. For the purpose of pointing out the position of the courts upon this point during the past two or three decades, a few of the leading cases in which the courts have had to pass upon going value will be reviewed.

The cases in which the precise question of allowing going value and the amount of the same has arisen are comparatively few. So far as purchase cases are concerned, without going into a lengthy review of the same, it can be said that from the decision in *National Water Works Co. v. Kansas City*, 10 C. C. A. 653, on to the decision of the United States supreme court in *Omaha v. Omaha Water Co.* 218 U. S. 180, there seems to be little doubt that a "fair and equitable valuation" requires a consideration of the element of going value. We are told also in these decisions that "the additional value created by the fact of many connections with buildings, with actual supply and actual earnings, is not represented by the mere cost of making such connections." We are told further that "good will" which so largely measures going value in competitive commercial enterprises cannot be taken as a measure of the going value of enterprises which are in the nature of natural monopolies.

While scarcely a purchase case can be found which does not recognize "going value", still when the same question arose in cases involving the fixing of rates it has been seriously fought over. Going value for rate-making purposes and going value for purposes of sale appear to be distinct concepts in the minds of many people, thereby giving ground for the conclusion that a principle applicable in one case is not necessarily applicable in the other. The courts, however, have allowed going value in rate cases, as may be seen from more recent decisions.

In the case of *Columbus Railway & Light Co. v. City of Columbus*, before the United States circuit court for the southern district of Ohio, the court concurred in the report of the special master who had declared that the company was also

"* * * entitled to a fair valuation of what may be called its going business, or its good will, that intangible addition to the assets to every corporation which arises out of its management, and is a gradual growth from its organization, consisting in this case of a knowledge of the business, a knowledge of the wants and demands of its customers, a knowledge of the growth of the city, and the tendencies of that growth as it has been observed through a period of years; the organization of its office and operating department, and, in general, all the experience which belongs to and is the property of every going concern, and which is acquired through a period of years of active operation."

Admirable as this exposition may be of that intangible something called "going concern", the importance of which all operators are impressed with, still it seems to me that it fails definitely to explain why a going concern has a value upon which the company is entitled to earn. It fails to call attention to the other very important consideration that few undertakings are remunerated from the start, that business must first be developed before the concern is in every sense a "going" or, better, a "paying concern". Again, even if it is granted that the factors mentioned by the court have a real tangible value capable of measurement, what is the proper limit of such value? It is not clear to me that these factors, though valuable, are properly and fairly appraised and included in valuations for rate-making purposes.

In the case of *Des Moines Water Co. v. City of Des Moines*, 192 Federal 193, the special master had included an allowance

of about 10 per cent of the physical value for the value of the business as a "going concern". In approving the master's report, JUDGE MCPHERSON recognizes early losses, for after reciting instances of increased value due to "going concern" in the competitive and public service fields, he says:

"These rules apply with equal force to a water works system. It took a long time to build up the system. First, it had to get in touch with patrons, make contracts and install meters and establish the business. During that period the capital stock was not earning what it should have earned. Now that it is a 'going concern' it is entitled to have these values considered in arriving at the true valuation of the plant. Such reasoning is endorsed by courts, both national and state supreme courts, and such conclusions are the result of sound reasoning. Such are the tests in all other vocations and business enterprises."

The above is a fairly comprehensive view of all the considerations upon which going value is founded. It also gives the ethical basis upon which these allowances rest. It goes much further in these respects than the *Columbus Railway & Light Co.* case previously cited.

The case of *Pioneer Telephone & Telegraph Co. v. Westenhaver*, 118 Pacific, 354, before the supreme court of Oklahoma, contains a discriminating discussion of going value. Part of its discussion is as follows:

"During the time of developing there is a loss of money actually expended and of dividends upon the property invested. How should this be taken care of? Must it be borne by the owners of the plant or by the initial customers, or shall it be treated as a part of the investment or value of the plant? Constituting the basis upon which charges shall be made to all consumers, you will receive the benefits from the increased service rendering power of the plant by reason of these expenditures. It seems that the last solution is the lawful, just and correct one. If rates were to be charged from the beginning so as to cover these expenditures and earn a dividend from the time a plant is first operated, the rate to the first consumers would be in many instances, if not in all, so exorbitant as to be prohibitive and would be so at the time when the plant could be of least service to them. On the other hand, the public can not expect as a business proposition or demand as a legal right that this loss shall be borne by him who furnishes the service; for investors in public service property make such investments for the return they will yield, and if the law required that a portion of the investment shall never yield any return, but shall be a loss

to the investor, capital would unwillingly be placed into such class of investments; but the law in our opinion does not so require. Private property can no more be taken in this method for public use without compensation than by any other method. When the use of the property and the expenditures made during the non-expense-paying and non-dividend-paying period of the plant are treated as an element of the value of the property upon which fair return shall be allowed, then the burden is distributed among those who receive the benefits of the expenditures and the use of the property in its enhanced value."

Diametrically opposed to the decision just quoted is the one delivered by the California supreme court in *Contra Costa Water Co. v. City of Oakland*, 113 Pac. 668. After stating that the value of the going business and of the franchise depends upon earning power and that these elements "would appear to play a very small part, if any, in the matter of valuation" because earning power "depends on the rates to be fixed annually by the city council in such a way as to give only a fair return on the property in use", and because "the franchise is neither exclusive nor defined by any special contract with the city", the court continued: "The theory was * * * that this value was measured by the losses sustained and the deficiencies of income accruing to it, in the early period of its operations, and up to the time that it had been brought to a paying basis." Here the court sets forth the methods employed by various witnesses in estimating the deficiency in income. In regard to this evidence the court says: "We think it very clear that it had no relation to the question of present value and afforded no basis for any valuation by the trial court of either of these elements, franchise or going concern. * * * It is unnecessary to say that the burden was on plaintiff to furnish data showing that these elements had a distinct independent productive value, before any such value could be included."

It may have been that the question of an allowance for going value was not properly presented to the court, or, if properly presented, that no such deficiency in earning could legally have accrued in view of some condition affecting the power reserved to the city through franchise provision, of annually fixing the rates so as to give only a fair return on the property in use. If this is true, the decision is by no means adverse to the principle of allowing something for "going value" when there is unre-

quited expenditure for the development of the business. Where the reasoning of the court appears to be out of line with the facts (especially from an economic point of view) is where it insists that going value must be proved to be a "distinct, independent, productive value". (It must be that the court had in mind here a productive value such as can be imputed to an item of physical property such as mains and services.) That going value is in a very real sense a productive value and that it is in fact based upon the value of tangible physical property must be clear when it is remembered that going value can accrue only when the revenue has been insufficient to pay reasonable operating expenses, including reasonable allowance for depreciation and for returns for interest and profit upon the fair value of the physical property. It is because such earnings had been developed that the physical property may be appraised at cost. Had such earnings not been developed the physical property may not have been worth more than its scrap value. Since these earnings thus have productive value, it necessarily follows that the cost of developing these earnings, like the cost of securing the physical property, must have productive value. It is contrary to ordinary business experience to assume that capital can be continuously commanded and enlisted in an enterprise if such costs are not given due consideration in the appraisals and in the determination of prices or rates.

A strictly legal view of the subject is given by the United States supreme court in *Cedar Rapids Gas Light Co. v. Cedar Rapids*, 223 U. S. 655. After stating that good will was very properly left out of consideration, it says with respect to going value:

"An adjustment of this sort under a power to regulate rates has to steer between Scylla and Charybdis. On the one side, if the franchise is taken to mean that the most profitable return that could be got, free from competition, is protected by the Fourteenth Amendment, the power to regulate is naught. On the other hand, if the power to regulate withdraws the protection of the amendment altogether, then the property is naught. This is not a matter of economic theory, but a fair interpretation of a bargain. Neither extreme can have been meant. A midway between them must be hit."

The New York public service commission, second district, contends that "going value" is sufficiently considered when the

physical property is valued at normal costs; in other words, when scrap values are not taken. It claims also that going value is given consideration in the usual percentage additions for overhead expenses. Finally, it concludes in *Mayhew v. Kings County Lighting Co.*, that "in the opinion of the Commission, whatever allowance should be made for the various factors covered by the somewhat vague and indefinite term, 'going value' beyond what has already been conceded should be made in determining the fair rate of return."

Now it seems the property of public service companies ought ordinarily to be valued at its normal cost; that only in case it can be shown that the property is surrounded by abnormal conditions such as faulty construction, mistakes of location, lack of growth of the community served, etc., can its value be taken at anything less than its normal cost. In fact, it is one of the fundamentals of the economic theory that items of property capable of rendering services valuable in and of themselves are worth at least what it would normally cost to produce them. Under competitive conditions, such properties may even be worth more than their normal cost due to the market conditions with which they are surrounded. Under monopolistic conditions, however, where considerations of market have less legal significance, such properties are worth only what they cost. This is the reason why all computations as to the "fair return" on the "fair value" begin with the normal cost of the properties, and a so-called intangible value for going concern arises when properties are unable to realize such "fair return" from the start. This added value gives the owners no more than what they are entitled to get under monopoly conditions. If the total value of those properties inclusive of their going value can never exceed the normal cost of the physical properties alone, what is to become of them while they acquire a paying business? To endeavor to provide for such losses through higher rates of interest later on would hardly seem to be the best way of dealing with them.

All who are familiar with our complicated industrial and commercial conditions understand how difficult it is to determine what is a fair rate of return for interest and profits on the fair value of the property and the business involved, even when the rate of return is not complicated by any such extra elements as the making up for past losses, and other items of this kind. When such losses as those mentioned must be provided for in the rate

alone, it becomes much more difficult to establish equitable relations between the utilities and the consumers without unjust encroachments on one side or the other than when losses of this kind are included in the valuations. Such losses are also in their very nature capital charges and should therefore be treated accordingly. In view of these and other facts, is it not best and most satisfactory to all concerned to charge them to the capital accounts and frankly acknowledge them in the valuations? This method of dealing with such losses also results in more accurate determinations of what they amount to and how much consideration should be given to them in fixing going value. This is of great advantage, particularly where conditions are such that it may be advisable to gradually reduce them through regular amortization charges.

This view seems to have been the one taken by the New York court of appeals in *People ex rel. Kings County Lighting Co. v. Wilcox et al.* 104 N. E. Rep. 911. The court said specifically: "If going value is capable of ascertainment, it will not do for the Commission vaguely to consider it in fixing the fair rate of return." The court's discussion of what it regards as a legitimate "going value" is so clear cut, forceful yet comprehensive, that it is quoted in full. The court said:

"Of course, a reasonable need for the service from the start and reasonably good management is assumed. While, within reasonable limits, service may be provided for anticipated needs, a company should not construct a plant in a wilderness, and after a city has been built around it expect to recoup losses from bad management. I do not include in the latter mere mistakes or errors in judgment which are almost inevitable in the early stages of any business. The fair return is to be computed on the actual investment, not on an overissue of securities, and the failure to pay dividends to the investor must be due to the causes under consideration, not to an accumulation of a surplus or to expenditures for permanent additions or betterments, which are included in the appraisal of the physical property; in other words, the actual net earnings are to be taken. Making proper allowance for the matters just considered, and perhaps for others which do not now occur to me, I define 'going value' for rate purposes as involved in this case to be the amount equal to the deficiency in net earnings below a fair return on the actual investment due solely to the time and expenditures reasonably necessary and proper to the development of the business and property to its present stage, and not comprised in the valuation of the physical property".

While the court thus held that going value is in a sense made up of losses during the earlier years, it also said in substance that when such losses had been made up by subsequent profits in excess of a fair return there might be no going value. There is nothing to indicate, however, that such excess earnings can be used as offsets to any other value than such as are based on the losses in question. Such losses and excess profits as those in question are also taken into consideration in fixing going value by at least some of the state commissions.

In determining such losses and such excess profits, however, it is necessary to have reliable data of the earnings of the plant and of its operating expenses, including depreciation and interest and profits for each year of its existence. In addition to this, it is also necessary to know by years the cost of the plant and many other facts relating to its business. These facts before used must then be tested as to their reasonableness. What is a fair amount for operating expenses and depreciation? What was the cost of obtaining capital and the enterpriser, not only at first when the prospects were uncertain or the risks high, but later, when owing to growth and development the plant had become an investment proposition? Risks are often controlling elements in the rates and terms upon which capital can be had. Hence, it often happens that what is regarded as reasonable return for interest and profit after a paying business has been developed may be much too low while conditions are much more unsettled.

Light upon these and other questions must be had from a careful study of all the facts and conditions that pertain to and surround the particular plant in question, and from the experience of other plants under like conditions, as well as from other undertakings where the conditions are similar. In this as in most other matters the truth is usually hidden in a mass of facts and is only to be brought to light through continuous and painstaking analysis. Hasty conclusions in such matters, therefore, often lead to misleading and unjust results.

The preceding definition, especially if it means that the business or the earnings to be developed should be reasonable earnings only and no more, appears to be sound from an economic point of view. Instead of indicating that law and economics have parted, it would seem to be an example of legal reasoning in the light of economic principles. It would even seem to meet

the most stringent requirements of the theory of principal and agent.

HOW IS GOING VALUE TO BE MEASURED OR APPRAISED?

Many methods are employed for determining going value. Some of these belong in the competitive field; others again have been developed from time to time. Only three of these will be explained herein.

The method of determining the "going value" of the business which was used widely at first is one that has been brought over from the field of private competitive business. This is the so-called capitalization of net earnings method. At the outset it should be clear that the use of this method in the field of natural monopoly must necessarily be attended with many difficulties. This method in effect will give the earning value of the plant and business taken collectively, and will, of course, vary with the net earnings and the assumed rate of capitalization. The difference between such earning value and the "fair value" of the physical property will give the value of the existing business. Of several objections which can be made to this method I will give only the most vital objection.

The earnings of plants naturally depend upon the rate charged. Any increase in rates will increase earnings and any increase in earnings will in turn increase the earning value. The "fair value" of the plant remaining approximately the same, the "going value" will increase with increase in rates. It is apparent, therefore, that if "going value" is to be allowed for rate-making purposes, going value will justify those rates which in turn will furnish the same going value again. Under this theory the initial rates are all-important. If they are reasonable, the result may be reasonable. It will be difficult, however, to test the reasonableness of new rates and of maintaining the reasonableness of old rates as conditions change with the passage of time. Therefore, in order to test the reasonableness of existing rates or of new rates to be fixed, it is necessary to step outside this circle. This is imperative because public utilities have certain monopoly powers. The conclusion must, therefore, be that the capitalization of net earnings method of determining going value is fallacious because based on a wrong principle of rate fixing.

A second method sometimes used, is that of determining the

cost of reproducing the net earnings. This has come to be known as the "comparative plant method" from a peculiarity of procedure. The amount of "going value", according to this method, is determined "by the net income which a plant in operation will have in excess of what a substitute plant of like character, the construction of which is begun at the time of valuation, can produce, the annual excess earnings being reduced to present worth."

A third method is that outlined in this paper, and under which the cost of developing reasonable earnings for a plant becomes evidence of going value. This method is applied in determining the cost of developing such earnings during the earlier years as well as in estimating the cost of reproducing such earnings under existing conditions. This method is employed by the Wisconsin Commission and is more fully explained later.

WHAT SHALL BE DONE WITH GOING VALUE AFTER IT HAS BEEN DETERMINED?

As has already been intimated, two alternatives are open with respect to the treatment of going value after it has been determined. It may be regarded as a part of the investment and included in the "fair value" upon which interest is computed, or it may perhaps be carried in a suspense account to be written off or amortized when the earnings have so grown as to leave a surplus above a reasonable return on the investment. While it is not maintained that there are not conditions under which the second alternative would not be equitable, there are certain valid reasons why the first alternative, that of charging it to the capital, seems in most cases to be the preferable one. These reasons are to be sought in the circumstances by which public utility plants are generally surrounded as well as in considerations of equity and public policy.

First, in order to amortize going value, the rates charged will have to be higher than when it is not amortized. Amortization charges must be met by consumers, regardless of whether they be few or many. They must be met in addition to charges designed to cover reasonable amounts for operating expenses including depreciation and interest and profits upon the investment. Consequently, the rates must be higher and if in addition the customers are few, these rates may even become prohibitive.

It has been urged that we follow the methods suggested by some of amortizing the entire cost of the plants. What this means to existing rate schedules does not seem to be considered. Interest and profit must continue to be paid in order to get capital and the enterpriser. Depreciation must be provided for, since the plant will not render adequate service unless it is maintained in a good condition. Costs for wages, material and services must also be regularly met if the plant is to be kept in operation. All of these charges are necessary in order to obtain the various factors of production. They must be met before any provision can be made to write down any part of the capital.

The real significance of amortization charges and their effect on the level of rates becomes most apparent when they are reduced to the cost per unit of service. For five typical lighting plants serving cities in which the population ranged from about 5,000 to about 350,000 inhabitants the annual charges necessary for amortizing the cost of the plants in twenty years on a 4 per cent sinking fund basis amounted to from 1.33 cts. to about 2.00 cts. per kilowatt-hour for the ordinary short-hour lighting user and from about 0.5 ct. to nearly 1.0 ct. per kilowatt-hour for the average eight-hour-a-day power user. It is hardly necessary to say that these increases in the rates are great enough to be burdensome to the ordinary user. If less than the entire cost of the plant is amortized or if such amortization charges are spread out over a longer period, the increases in rates will, of course, be less, but will nevertheless prove burdensome. Because the services rendered by public service plants are often rendered in competition with other sources of supply where these practices would not prevail, such increases in rates would prevent a proper development of the service. Territory thus may never become saturated and the maximum economy which industries of increasing return are capable of may never be realized. For we all know that the cost per unit of service tends to decrease with increases in population or with the number of consumers.

A second reason why it seems best to charge "going value" to capital rather than to amortize it, is that it makes the existing generation bear excessive charges which it cannot afford to bear in order that succeeding generations may enjoy these facilities at unduly low rates. This is an ethical consideration which should not be overlooked. The injustice is made all the greater if the amortization charges have to be borne while the commun-

ities are smaller and the cost per unit correspondingly higher. It may operate even to prevent many from availing themselves of the conveniences which such services offer and which it is their real purpose to furnish. When these services are necessities as they have become, especially to those who live in cities and villages, the broad grounds of public policy would require that they be made available to as many as possible.

A third reason why going value should be added to the capital is that the costs which it represents are in the nature of an investment and, like all investment costs, should as a rule be capitalized. The costs represented by going value are like the costs represented by interest on capital and certain other costs necessarily incurred during the construction period. To be sure, when going value is added to the original capital upon which interest and profits are based, it increases the charge somewhat to consumers. This charge, however, has proven to be quite low. At any rate, the total charge has never become so high that it could not be justified from all points of view. And since plants are built as much to render service to future consumers as present consumers, it is not unfair to have future consumers bear a legitimate initial cost.

By the cost of developing reasonable earnings, which cost thus becomes the basis for going value, is not only meant the cost of developing such earnings when the plant first began business and under the conditions which then prevailed, but it also includes the estimated cost of developing such earnings at the time of the appraisal and under the conditions which then exist. In other words, the original and actual cost of the business as well as the cost of reproducing it constitutes evidence of going value. The situation in this respect for going value does not differ greatly from the situation for the physical property. The original and the actual costs are not always available, and even when available they fail to take account of the many changes that may have taken place since these costs were incurred, which changes are often of such nature that they should receive consideration in the appraisals. Most of these changes, however, are represented in the cost of reproduction. Conditions which make for progress, under our present economic system, also often seem to demand that the cost of reproduction rather than the original cost should be the basis for values and prices. In arriving at a fair and equitable valuation, therefore, it is often necessary to know the

cost of reproducing the plant and the business as well as their original cost. These costs should also in each case be the normal costs such as obtain when conditions are normal. When the costs and the conditions are abnormal they should only receive such consideration as appears to be fair under the circumstances.

In conclusion, it may be said that justice demands that, in the appraisals of public utilities, consideration be given to that element which is usually called going value. Such consideration is not only sound in theory, but possible in practice. The conditions and facts upon which it should be based are inherent in public utility undertakings and arise from the conditions under which the service is performed, the powers the utilities have, and the legal restrictions placed upon them. Without such consideration it is in most cases difficult if not impossible to establish equitable relations between the public on the one hand and the utilities on the other.

The methods actually employed by the Commission for determining the cost of developing reasonable earnings, not only for the earlier years of the plant when the business is first developed, but at some later date when it may be necessary to obtain some idea as to what it would cost to reproduce the existing business at that time, are explained in the following pages.

ORIGINAL COST.

Going value as thus outlined is largely based on two sets of facts covering the plant and its business. One of these relates to the cost of developing reasonable earnings for the plant when it first began business, and under the conditions which then obtained; the other relates to the cost of developing reasonable earnings for the plant at a later date when it has to be appraised and under the conditions by which it is then surrounded. These costs represent in fact the most important evidence of going value that appears to be obtainable. In order to illustrate how these costs are determined a brief description of the methods and some of the main facts employed for this purpose in a water works case that recently came before the commission, is included herein. These particular facts, as modified, were chosen for this purpose for the simple reason that they were readily available and could be gotten together with less work than any other facts of the kind familiar to the writer.

In connection with these illustrations it will be necessary to repeat some of what has already been said. Few utilities appear to earn reasonable returns during the earlier years of their existence. This is a fact that is quite well understood. Some of these utilities are probably permitted to make up at least a part of these losses later on, but most of them are subjected to regulation of some sort long before the earnings are sufficient to cover all the deficits besides reasonable returns. Losses thus incurred under normal conditions should be made good in some way. This is demanded on the ground of justice to the investors and is in line with public policy. The best, and in most cases, the most economical way in which this can be done is by including these losses in the value upon which rates are based or the purchase price fixed. The amount by which the total value is thus increased is often called going value, but is in reality only a sort of development cost or value. In fact, the amounts by which the earnings of the plant have failed to meet the ordinary operating expenses and taxes and provide for depreciation and reasonable returns for interest and profit on the investment will in most cases closely measure the cost of developing reasonable earnings for the plant, or such earnings as those to which, under normal conditions, the plant is legally and justly entitled.

In making such comparisons between the earnings on the one hand and the operating expenses and charges on the other, it is important that each should be made to include all items that properly belong therein and that there should be excluded therefrom all irrelevant and improper items. As to the earnings, correct data are as a rule available, but this is not always true of the expenses and charges. For the latter the records are often either missing, incomplete, or so confused with the construction accounts that much time and work is needed to unravel them and to determine the fair normal cost for each item.

Generally speaking, however, it may be said that the operating expenses proper should include every cost necessary to render efficient service under competent management. They may also include reasonable amounts for advertising and display and for other efforts to make the public familiar with the advantages and character of the service. It may even be necessary in order to obtain takers to include in the expenses such costs as arise from reduced prices for house piping, wiring, and for other equipment. Free service, or service at greatly reduced rates for lim-

ited periods, may also have to be resorted to. The cost of canvassing for business and the cost for experiments and demonstrations and for much other work may also be proper.

The depreciation charges should be just about high enough to cover the cost of renewals when the property has to be replaced. Likewise the charges for interest and profits must also be sufficient to cover the cost at which the necessary capital and the enterpriser were induced to enter the field, when these sums are reasonable under the circumstances. More than this is not necessary; less than this would have resulted in no service.

By what has been said herein, however, is not meant that deficits from operation can be equitably taken into account in the appraisals regardless of the conditions under which they were incurred. As already stated, when such deficits are due to abnormal conditions or when due to bad management, defective judgment, extravagance, lack of ordinary care and foresight, unduly high capital charges or other causes of this kind, it is manifestly clear that they should be accorded little or no consideration in the valuation and rates. On the other hand, it is not always safe to assume in such calculations that interest charges should remain as low during the earlier years when the risks are greater as later on when, owing to more settled conditions, the risks have been greatly reduced.

In determining what is a fair cost of developing the business of a plant there are also many other facts and conditions to be considered. In this connection, for instance, one should know the purposes for which the appraisal is made, the cost new, the cost new less depreciation, and the fair value of the physical property, whether depreciation has been earned, and if so, whether it has been set aside for renewals or withdrawn from the business, the amount that is needed for working capital, the time required for the development of reasonable earnings, or earnings that are sufficient to cover such operating expenses and charges, what should be the relation between the operating expenses proper and the earnings of the plant when it is in partial as well as in full operation, whether each branch of the service contributes its just share of the earnings or bears its just share of the costs, and many other facts of this nature.

Such facts as those just outlined should cover the period when the earnings of the plant are first developed as well as for later years about the time when the plant happens to be appraised.

The fact is, that in order to reach sound conclusions in complicated valuation cases it is often necessary to have such facts for the entire period the plant has been in operation.

To discuss in detail how correct data of this kind may be obtained is not practicable at this time. Concerning the length of time that is required for developing reasonable earnings, however, a few facts may be offered. Experience indicates that for water works, under normal conditions, the time needed for this purpose varies from about three to about ten years when the plant first begins operations, and from two to five or six years later on when conditions have grown more favorable. When more time than this is needed, the plant is likely to be surrounded by abnormal conditions. Gas plants would seem to require nearly as much time as this and this also is true for some of the other classes of utilities. Electric lighting and power plants, however, seem on the whole to need less time for this purpose than any of the other classes. The number of customers and the volume of their business are usually smaller at first than later on, and this is often the main reason why a paying business can be more quickly developed or reproduced when the plant has been in operation for some time, than it could at first.

In all work connected with the appraisal of utilities, when facts of the sort outlined are employed, it is important to know whether the plant is operating under normal conditions. While most utilities no doubt are earning, or can be made to earn, reasonable returns on a fair value of their property and business, there are unfortunately many plants that are so situated that they neither are earning, or can be made to earn, such returns. Plants that come in this class, however, are not subject to the ordinary rules of valuation, but must be dealt with in the light of their own special facts.

The plant in question here began operations in 1885, has been in operation ever since, and is still furnishing service. To begin with, its revenues from hydrant rentals and other public sources appear to have been fairly adequate but its earnings from the commercial service seem small. While the original plant was of considerable size and was also extended from year to year, the growth of its business was comparatively slow. In fact, its earnings were not sufficient to cover operating expenses, depreciation and interest at 7 per cent on the cost of the physical property, including the working capital, during the first eight years of its

operation; and a whole decade elapsed before it appears to have been on a paying basis.

Two tables have been included here which bear on the matters before us. One of these, Table I, shows by years the investments in the plant up to 1894, as well as the annual interest charges on this investment. The other, Table II, shows by years the cost of the depreciable property as well as the depreciation charges thereon. These tables follow:

TABLE NO. I.

ESTIMATE OF INTEREST BASED ON COST NEW OF PHYSICAL PROPERTY.

Year	Depreciable property 1st of year	Non-depre- ciable property 1st of year	Total physical property col. 2 + col. 3	Construc- tion dur- ing year	Total col. 4 + ½ col. 5	Interest 7% on col. 6
1	2	3	4	5	6	7
1885	\$254,800	\$12,073	\$266,882	\$5,135	\$269,450	\$18,862
1886	259,944	12,073	272,017	5,135	274,585	19,221
1887	265,079	12,073	277,152	5,135	279,720	19,580
1888	270,214	12,073	282,287	5,135	284,855	19,940
1889	275,349	12,073	287,422	5,136	289,990	20,299
1890	280,485	12,073	292,558	11,523	298,320	20,882
1891	292,008	12,073	304,081	11,524	309,843	21,689
1892	305,532	12,073	315,005	15,000	323,105	22,617
1893	318,532	12,073	330,605	6,843	334,027	23,382
1894	325,375	12,073	337,448	10,195	342,546	23,978

TABLE NO. II.

ESTIMATE OF DEPRECIATION BASED ON COST NEW OF DEPRECIABLE PROPERTY.

Year	Cost new of depreciable property first of year	Construction during year	Total col. 2+½ col. 3	Depreciation 0.45% on col. 4
1	2	3	4	5
1885	\$254,809	\$5,135	\$257,377	\$1,158
1886	259,944	5,135	262,512	1,181
1887	265,079	5,135	267,646	1,204
1888	270,214	5,135	272,782	1,228
1889	275,349	5,136	277,917	1,251
1890	280,485	11,523	286,247	1,288
1891	292,008	11,524	297,770	1,340
1892	303,532	15,000	311,032	1,400
1893	318,532	6,843	321,954	1,449
1894	325,375	10,195	330,473	1,487

The operating expenses, including repairs and taxes of the plant during the period, do not seem excessive. They appear to have increased with increases in the extensions of the plant and with the growth of the business and very nearly in the same ratio. It will be noticed that the interest charges, which depend on the size of the plant or on the investment, required considerable more than one-half of the revenue during the entire period.

When the earnings by years on the one hand, and the sum of the operating expenses, depreciation and interest charges by years on the other are compared, it is found that the former were the greatest, but that the deficits from year to year were gradually growing smaller.

TABLE NO. III.

DETERMINATION OF SURPLUS OR DEFICIT FOR OPERATIONS

During Period 1885-1894 Inclusive.

Year	Operation mtce. taxes	Deprec. 0.45% of cost new	Total expense	Gross revenue	Net revenue	Interest at 7%	Surplus	Deficit
1885	\$9,000	\$1,158	\$10,158	\$19,000	\$8,842	\$18,862	.....	\$10,020
1886	9,800	1,181	10,981	21,000	10,019	19,221	.....	9,202
1887	10,700	1,204	11,904	23,400	11,496	19,560	.....	8,084
1888	11,500	1,228	12,728	25,600	12,872	19,940	.....	7,068
1889	12,200	1,251	13,451	27,800	14,349	20,299	.....	5,950
1890	13,000	1,288	14,288	30,200	15,912	20,892	.....	4,970
1891	13,800	1,340	15,140	32,300	17,160	21,699	.....	4,529
1892	14,238	1,400	15,638	34,622	18,984	22,617	.....	3,633
1893	15,476	1,449	16,925	43,182	26,257	23,382	\$2,875	.....
1894	16,885	1,487	18,372	45,455	27,083	23,978	3,105	.....
Total surplus and deficit.....							\$5,980	\$53,456

Table III thus shows the cost of developing earnings for the plant that were high enough to cover operating expenses, depreciation and interest at 7 per cent on the cost new of the physical property, including working capital and the cost of the business. This cost, under this method, is made up of the deficits during the period, which deficits began with the first year of operation and continued for the eight succeeding years, or until the end of 1892, when they aggregated \$53,456.

The years 1893 and 1894 show considerable surpluses over and above the expenses and charges just mentioned, but it was not until in 1895 that the earnings of the plant were high enough to cover the outlays in question and in addition to this also cover interest charges on the cost of developing the earnings.

Since the deficits or costs incurred in developing the earnings are in the nature of investments, they are probably entitled to interest from the time they were incurred until the end of the period. When such deferred interest charges are included the total amount is, of course, considerably increased. Just what this increase amounts to is a matter that is greatly affected by the

rate of interest allowed, and how the surpluses in the latter years are treated. It is probable, however, that the total cost of developing the earnings in question on this basis amounts to from \$70,000 to \$75,000 or to even more.

The original cost of developing the earnings, as thus determined, constitutes important, but not always controlling, evidence in the determination of going value. The original cost of the business, like the original cost of the physical property, may contain elements which it might not be fair to include in the valuation of some later date.

On the other hand, facts and conditions may also have come into existence since the plant was constructed that are of such nature that they can not be fairly omitted from the appraisals.

Thus great and far-reaching changes may have taken place in prices, processes and other conditions. There may also be questions as to whether those who actually had to bear these losses would be compensated if they were now taken into account, or whether these losses have been wiped out through reorganizations, receiverships, changes of ownership or in some other way. Consideration may also have to be given to the earnings and expenses of the utility subsequent to the time when it was brought to a paying basis. Conditions are constantly changing and these changes can not often be entirely disregarded in the appraisals. This is also in line with the position of courts and appraisers as well as with the situation as it obtains in the competitive field. Under free competition, for instance, prices and hence values are often more affected by the cost of reproduction than by the original cost, and this, because of such conditions as those mentioned, is frequently also the case in the non-competitive field.

COST OF REPRODUCTION.

It is for such reasons as those just outlined, therefore, that, in appraising public utilities, the cost of reproduction is obtained not only of the physical property, but of the earnings or business as well. The original cost of the property and business may be said to be the actual cost at the time of construction and business under such prices and such conditions as then obtained. The cost of reproduction of these elements is the estimated cost of reproducing them at some later date under the prices and con-

ditions which then prevail. The differences between these two costs should represent such changes as have taken place in prices and other conditions during the interval. In some cases these differences are found to be considerable; in other cases, again, small. The tendency now seems to be to attach the greatest importance to the cost of reproduction. One reason for this is that the original cost is nearly always somewhat in doubt, even where the records have been kept with considerable care. Another reason is that the cost of reproduction is supposed to represent the cost under existing conditions. These reasons are also very important. Nevertheless the original cost, whenever it can be determined, is not only an important check upon the cost of reproduction, but is frequently an almost indispensable guide in bringing about just relations between the investor on the one hand and the consumer on the other. If the reproduction cost is the cost that is mostly sought, it is probably because it is supposed to be a better or more correct measure of the present value than is the case for the original cost.

A series of computations are included herein which are intended to show the cost of reproducing or developing reasonable earnings for the plant in question at the beginning of 1913. These computations are, among other things, based upon the cost of reproduction new of the physical property and working capital of the plant, its operating expenses and taxes for the calendar year 1912; the same rates for interest and depreciation as those used in the preceding calculations; and upon many other facts as will be explained later.

The water works in question continued to grow from the time it began business in 1885 until the beginning of 1913, when it was taken over by the city. At the latter time the cost of reproduction new of the physical property and the working capital was about as follows:

Cost reproduction new	\$518,815
Materials and supplies	3,173
Cash, etc.	6,000
Total	<u>\$527,988</u>

Since in this case nothing had been reserved and set aside for depreciation, and since for this reason the cost new less depreciation of the same becomes the measure of the value of the physical property of the plant, it can, perhaps, be argued that this

cost of the physical property, instead of its cost new should also be used in the going value computations. This argument would also seem to be strengthened by the fact that the proposition is to reproduce reasonable earnings for the existing property when this property is fairly valued. Without examining these arguments in detail it can, perhaps, be said that any reductions in the total value of a plant that may become necessary because of failure to set aside, for their proper purposes, the amounts collected for depreciation, should probably be made in the amount at which the physical property alone is included in the total value rather than in both the physical property and in its going value. At any rate, there would seem to be fully as much to be said in favor of the latter course as in favor of the former. In view of this it was thought proper in this case to use the cost new in computations herein. The difference between the cost new and the cost new less depreciation of the plant in question was estimated at about \$60,688. As the cost new of the total physical property and working capital amounted to \$527,988, and as the cost new of the depreciable property footed up to \$503,815, it is found that interest at 7 per cent on the former item amounts to \$36,959, and that depreciation at 0.45 per cent on the latter is \$2,267. The operating expenses and taxes for 1912 amounted to \$36,349. On this basis the expenses and charges which it is necessary for the earnings to cover in order that they may be regarded as approximately reasonable may be summarized as follows:

Interest and profits	\$36,959
Operating expenses	36,349
Depreciation	2,267
Total	<u>\$75,575</u>

At the time of this appraisal the plant received, as earnings from municipal sources, \$17,976 for hydrant rentals, \$2,350 for street sprinkling, and \$1,020 from miscellaneous services, or a total of \$21,346. This leaves \$54,229 to be obtained from commercial sales in order that the earnings may cover the above cost of \$75,575. This sum of \$54,229 is somewhat lower than the amount the plant was actually receiving from commercial sales at that time.

From past experience in such matters, and from a careful examination of the facts in this case and the conditions by which the plant is surrounded, it appeared that it would take from

three and one-half to five years to develop the necessary earnings. In this estimate it was assumed that the \$21,346 received from public sources would remain constant during the development period, and that of the commercial revenues about 35 per cent had been acquired by the end of the first year, 60 per cent by the end of the second year, 80 per cent by the end of the third year, 95 per cent by the end of the fourth year, and 100 per cent by the end of the fifth year. On these bases the reasonable revenues would be developed about as follows:

Years	1st	2nd	3rd	4th	5th
Municipal	\$21,346	\$21,346	\$21,346	\$21,346	\$21,346
Private or Com.	18,960	32,567	43,383	51,518	54,229
Total	\$40,326	\$53,883	\$64,729	\$72,864	\$75,575
Per cent	62.72	77.06	88.53	97.13	100.00

As the proposition in this case is to reproduce or develop reasonable earnings for the property actually appraised only, it follows that the value as well as the interest and depreciation thereon remain unchanged while such earnings are developed. The operating expenses, however, vary partly with the pumpage and partly with the volume of the business. Experience in such matters indicates that the proportion of the expenses that varies with the pumpage is about 36 per cent of the total. The larger users are, as a rule, taken on first. As their rate per unit is low the ratio of the pumpage to the earnings is about twice as great for the first year as later on. The pumpage expense for the first year is therefore weighted by two. The relation of the pumpage for each year of the period to the pumpage for the last year would be about as follows: first year 62.72 per cent, second year 77.06 per cent, third year 88.53 per cent, fourth year 97.13 per cent, fifth year 100 per cent.

The operating expenses for the period, when adjusted on the cases outlined, were thus about as follows:

Years	1st	2nd	3rd	4th	5th
Pumpage expense	\$8,208	\$10,084	\$11,585	\$12,710	\$13,086
Other expenses	12,413	16,587	19,925	22,428	23,263
Totals	\$20,621	\$26,671	\$31,510	\$35,138	\$36,349

When the earnings on the one hand, and the operating expenses, including depreciation and interest, on the other, as outlined above, are brought into comparison the results obtained will show the cost of developing what is assumed to be reasonable earnings for the plant at the time of the appraisal. That is, this cost is then represented by the amount by which the operating expenses and charges, as stated, exceed the gross earnings. The actual annual deficits on this basis are clearly shown in the following table:

TABLE NO. IV.

Years	1st	2nd	3rd	4th	5th
Interest and profit.....	\$36,959	\$36,959	\$36,959	\$36,959	\$36,959
Depreciation	2,267	2,267	2,267	2,267	2,267
Operating expense	20,621	26,671	31,510	35,138	36,349
Total cost	59,847	65,897	70,736	74,364	75,575
Total revenue	40,326	53,883	64,729	72,864	75,575
Deficits	19,521	12,014	6,007	1,500	.....
Deficit at end of fifth year...					\$39,042

These deficits are in the nature of investments. When interest and profits at the same rate as for the physical property are for this reason allowed thereon, the situation is as follows:

TABLE NO. V.

Years	1st	2nd	3rd	4th	5th
Deficit beginning of year.....	\$0	\$19,521	\$32,901	\$41,211	\$45,596
Interest on same.....	0	1,366	2,308	2,885	3,192
Deficit accumulating	\$19,521	12,014	6,007	1,500	0
Total	\$19,521	\$32,901	\$41,211	\$45,596	\$48,788

It appears from all this that the deficits or costs directly incurred in the operation of the plant during the development period amount to \$39,042 and that when interest at 7 per cent is allowed thereon these deficits are increased to \$48,788. This

sum therefore represents the cost, in the early part of 1913, of developing reasonable earnings for the physical property and working capital of the plant when it is valued at its cost of reproduction new. It constitutes important evidence of what is the fair going value of the plant. In fact, many appraisers would undoubtedly accord to it greater weight than that which they would give to the original cost of developing the business. As to whether the so-called original cost of developing reasonable earnings, or the so-called cost of reproducing such earnings at the time of the appraisal should be given the most weight in determining going value, is a matter that largely depends upon the conditions, for the fixing of a valuation is a judicial act, in which all the facts and conditions involved should receive due consideration. While the latter may be the better measure of the present value, questions of equity may be involved which can be determined from the original cost only.

COMPARATIVE PLANT METHOD.

In connection with the case from which the figures used in the preceding analysis were taken there was presented by the utility an estimate of the going value under the so-called comparative plant method. This method has many supporters and is frequently used. In order to point out some of the more important differences between the comparative plant method and the method used in the preceding analysis for determining the cost of reproducing reasonable earnings, the more essential features of the former method and the result obtained thereunder in this case will be presented herein.

Under the comparative plant method, as pointed out above, going value is supposed to be represented by the present worth of the difference in the net earnings at the end of the development period between the existing plant and a new and similarly situated plant starting in business at the beginning of the development period.

In computing the going value under this method in this case, the following assumptions were made: that the necessary capital to build a plant in all respects like the existing plant is in hand and available January 1, 1913; also, that construction will begin on that date, progressing as rapidly as possible, and be completed by December 31, 1914, that is a construction period of two years.

It is assumed that the new plant will begin taking business January 1, 1914, and continue adding new business as rapidly as conditions will permit, namely, at the rate of 28 per cent of the ultimate business to be obtained during the first year; 28 per cent additional during the second year; 21½ per cent the third year; 15½ per cent the fourth year; and the balance, 7½ per cent, the last year. That is, five years for the reconstruction of the business of the company, which begins one year before the construction of the physical property is complete.

The following assumptions were made for the existing plant: the value of the physical property on the basis of cost of reproduction new, as determined by the Railroad Commission of Wisconsin, excluding paving, materials and supplies, as of January 1, 1913,

was found to be	\$512,948.00
adding paving allowed by the Commission	56,562.00
adding materials and supplies as found by the Commission	3,173.00
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total value of the physical property is	\$572,683.00

No allowance in the above is made for working capital, which might properly be added, but which is excluded in the following computations in order to avoid any question of controversy.

The gross revenue of the company for the years 1903-1912 shows a practically uniform and constant increase at the rate of \$2,500.00. The operating expenses for the same period vary considerably, but during the latter years indicate that they will amount to 47 per cent of the revenue.

It is assumed that the existing company will continue to do as progressive a business in the future as in the past. Therefore, the same rate of increase in business as has taken place in the past is assumed will continue during the five year period which is used as the basis of estimate of going value.

It was further assumed that the gross and net earnings for the year ending December 31, 1912, which amounted to \$78,694 and \$39,709, respectively, and the operating expenses for the same period, which footed up to \$36,730, were proper bases upon which to build up the assumed increases in the same during the developing period as well as for the calculations involved. Upon

these facts the respective net earnings of both the existing plant and of the comparative plant for each year during the development period were computed. The net earnings for the two plants, as thus determined, were then compared and the differences between them were reduced to their present worth. The present worth that was thus obtained was regarded as the going value of the plant. The results of these calculations are shown in the following table:

TABLE NO. VI.

GOING VALUE COMPUTATION AS OF JANUARY 1, 1913.

Year ending Dec. 31	Total net return			Present worth of excess earnings of existing plant over comparative plant		
	Existing plant	Compar- ative plant	Excess of existing	Years	Factor at 6 per cent	Amounts
1913	\$40,408	\$15,606	\$24,802	1	0.943	\$23,388
1914	41,786	10,714	31,072	2	.890	27,654
1915	43,072	20,446	22,626	3	.839	18,983
1916	44,353	33,594	10,759	4	.792	8,521
1917	45,635	42,542	3,093	5	.747	2,310
1918	46,920	46,920	0	6	.705	0
Total	\$202,174	\$169,822	\$32,352	.....		\$80,856

Without discussing the foregoing table in detail, it may be said that during the period covered the net earnings of the existing plant exceeded the net earnings of the comparative plant by about \$92,352, and that the present worth of this sum was \$80,856. This latter sum was, as stated, assumed to correspond to the fair going value of the plant.

Between the comparative plant method on the one hand and the cost method employed by the Commission there are important differences. These differences are more noticeable in the definition of the two methods and in the results obtained under them than in the methods themselves. The former, for instance, defines going value as the value of a created income; the latter defines it as the cost of developing reasonable earnings for the plant. These definitions seem to have nothing in common. The

results obtained under these methods are also, as pointed out above, far apart. Between the deficits in the net earnings of the comparative plant and the deficits in the total earnings under the cost method the difference in the principles involved would not seem to be great. Upon closer analysis it will be found that these deficits in both cases really represent the respective costs of developing the earnings of the plant. But, as stated, this resemblance in method does not extend to the results. The cost, for instance, of developing the earnings is much greater under the comparative than under the cost method.

One reason for this is found in the fact that the earnings to be developed are much greater under the comparative than under the cost method. In the former case, for instance, they are made up of the gross earnings of the existing plant for 1912, which amounted to \$78,694, and of the assumed natural growth in these earnings for six years which was placed at \$2,500 per year, or \$15,000 for the period, a total for both of \$93,694. Under the cost method, on the other hand, these earnings were placed at only \$75,575. As it costs more to develop a greater than a smaller amount, it follows that the development cost is greater in the former case. Another reason is that the ratio at which the business was recovered from year to year during the development period was assumed to be slower under the comparative than under the cost method. This in turn caused the deficits and hence the cost in the former case to become relatively greater.

The slower ratio of growth in the business under the comparative method is evidently based on the assumption that the customers to be acquired had not become acquainted with the advantages of water under pressure and that their houses were neither equipped with plumbing nor provided with service connections. Such conditions would undoubtedly tend to retard the growth of the business, but they are at variance with the situation. It is obvious that in reproducing a business of this nature it must be assumed that the customers to be had are not only familiar with advantages of the service, but are dependent upon it; and that their houses are also provided with the necessary equipment. Those who are now takers would undoubtedly again become takers without any such delays as are mostly met with under the usual methods of acquiring customers when the business is first started.

In computing the cost of reproduction to-day it is, of course,



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necessary and proper that this cost should be based on existing conditions. This applies as much to the earnings as to the physical property. This is also the theory upon which the cost of reproduction of the earnings in the preceding analysis was computed. Under the comparative method, on the other hand, this rule does not appear to have been observed. Under that method the earnings used were based on existing and assumed future conditions, while most of the remaining circumstances under which the earnings were developed appear to be such as existed at the time the plant began business.

To use the existing revenues of the plant as the measure of the earnings to be developed, regardless of whether they are reasonable or not, would hardly seem to be equitable in an industry where the rates are subject to regulation by the government. It would seem that for such industries it can hardly be safe to assume any other earnings for such purposes than those which may be regarded as reasonable under the circumstances.

To include the growth of the business and the plant during the development period in the earnings to be developed and in the figures upon which these earnings are computed is also doubtful practice. It is likely to lead to higher than reasonable earnings for development purposes. It certainly results in obtaining a larger plant with greater earnings than those which are to be duplicated. In purchase cases it would also mean that the cost of developing additional earnings is not only included in the purchase price, but will have to be borne again by the purchaser and the public when such additional business actually has to be developed. Similar duplications would also result, under these circumstances, in appraisals for rate-making purposes. That this is the case becomes clear when it is borne in mind that new extensions are seldom paying investments at the start.

In the application of the comparative plant basis in this case there also occurred certain duplication of interest charges as between the construction period and the period allowed for the development of the business. That is, on certain parts of the capital interest was first allowed in the construction charges and again included in the costs which represent the earnings to be developed. This can hardly be proper. The sound practice in this respect would seem to be to charge construction with all proper interest charges incurred during such construction and to charge against operations all proper interest charges incurred during the development period, after the plant began operations.



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